GRASSROOTS JOURNALS

Grassroots Journal of Natural Resources, Vol.8 No.3 (December 2025)
ISSN: 2581-6853 | CODEN: GJNRA9 | Published by The Grassroots Institute
Website: https://grassrootsjournals.org/gjnr | Main Indexing: WoS, CABELL, EBSCO

ISSN 2581-6853 | 8(3) December 2025

00618 | Research Article

Multi-Stakeholder Governance in Ghana: A Polycentric Path to Sustainable Environmental Development

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How to cite this paper: Amanfo, R., Abugre, S. and Gyasi, S.F. (2025). Multi-Stakeholder Governance in Ghana: A Polycentric Path to Sustainable Environmental Development. *Grassroots Journal of Natural Resources*, 8(3): 445-468. Doi: https://doi.org/10.33002/nr2581.6853.080318

Received: 08 October 2025
Reviewed: 18 November 2025
Provisionally Accepted: 21 November 2025
Revised: 28 November 2025
Finally Accepted: 30 November 2025
Published: 31 December 2025
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Abstract

The sustainable management of natural resources has become a global priority. Yet in Ghana, illegal mining ("galamsey") continues to escalate, causing severe degradation of forests, water bodies, and other ecosystems. This paper examined two core objectives: analyzing the systemic challenges faced by environmental law enforcement agencies in Ghana, and evaluating the extent to which the coordination among these agencies aligns with principles of polycentric governance. The research draws on qualitative data from interviews with 19 participants, including institutional heads and environmental-governance experts, and two focus-group discussions comprising 14 representatives from various enforcement bodies. The findings indicate that the effectiveness of these institutions is significantly undermined by a range of systemic challenges, including inadequate resources, limited institutional capacity resulting from limited training to address evolving environmental crimes, and political and other external interferences. The findings also indicate a lack of robust inter-agency coordination among enforcement agencies. The findings suggest that polycentric governance systems can foster superior coordination, whereas fragmented or overly centralized systems tend to perform poorly. The study recommends enacting laws to improve coordination among environmental enforcement agencies, modeled on Ghana's Regional and District Security Councils (REGSEC/DISEC).

Keywords

Environmental law enforcement; Polycentric governance; Environmental crime; Institutional coordination

Introduction

In recent years, global concerns about the environment have increased significantly, despite environmental degradation being a longstanding issue (Jarrell, Lynch and Stretesky, 2013). This has prompted the implementation of policies and laws to regulate environmental management. For instance, the UN report "Our Common Agenda" (2021) states that reducing risks to the planet must be part of every policy, budget, decision, and investment. According to Bennett and Satterfield (2018), problems of environmental degradation are viewed as having managerial, behavioral, or technical aspects; therefore, increased attention has been focused on the need to use environmental governance as a means to solve these complexities. According to the researchers, the issue of involving environmental protection in every policy is what has led to the introduction of a concept called "environmental governance".

Richard and Rieu (2009) note that the term "governance" derives from the Latin “gubernare” and the Greek “kubernan”, both originally associated with ship-pilotage. Stoker (2018) defines government as a primary function carried out by institutions responsible mainly for maintaining public order. Oguntan (2022), however, argues that governance is about the exercise of state power to control the state's economic and social resources to bring about development.

In environmental studies, Graham, Amos and Plumtree (2003) define governance as the interactions between governmental and non-governmental institutions across processes that shape environmental management. Environmental governance can also be simply referred to as both the formal and informal institutional interactions or arrangements used by a particular country to solve environmental problems (Ogunkan, 2022). Since the concept's introduction, various theories have emerged, including anticipatory governance (Boyd *et al*., 2015) and institutional governance (Adger, Brown and Tompkins, 2005; Paavola, 2007). However, many of these have not fully addressed the substantive question of how to achieve concrete environmental outcomes (Bennett and Satterfield, 2018). Broader consultation and wider stakeholder involvement in environmental governance have gained scholarly recognition as key approaches for driving social change and achieving sustainable environmental development (Erhun, 2015).

Banchirigah (2008) and Bansah (2019) note that despite global environmental awareness and evolving governance theories, Ghana continues to face significant environmental challenges. Similarly, Mensah *et al*. (2020) also argue that, despite the existence of different environmental regulatory policies and different enforcement agencies in Ghana, it is still faced with serious environmental challenges that usually occur through illegal mining (galamsey). Mensah *et al*. (2023) confirm that environmental degradation persists in Ghana due to limited stakeholder collaboration, weak law enforcement, and fragmented institutional mandates. These governance challenges call into question whether Ghana’s system qualifies as a genuinely polycentric governance structure. This study assesses whether Ghana’s environmental governance framework aligns with polycentric principles and whether effective governance can enable sustainable environmental development.

This study is therefore very important as it seeks to find out why there is still environmental degradation in Ghana despite the existence of different environmental laws and enforcement agencies. This paper examines two core objectives in environmental governance:

i. Analyze the systemic challenges faced by environmental law enforcement agencies in Ghana; and
ii. Evaluate the extent to which the coordination among these law enforcement agencies aligns with the principles of polycentric governance.

The findings aim to offer practical policy reforms and improve environmental governance practices in Ghana and other developing countries.

Theoretical Approach

Polycentric Environmental Governance

Aligica (2013) notes that the concept of polycentricity was developed by Vincent and Elinor Ostrom in the 1960s and 1970s. Ostrom and the Bloomington School advanced the concept to analyse structures shaping metropolitan governance and local economies (Parks and Oakerson, 2000). Polycentric governance, according to Ostrom, Tiebout and Warren (1961), represents many different structures involved in decision-making that are also formally independent, but each considers the others as competing with each other (competitive relationship); they coordinate with each other in their work and may have a common center.

The concept of polycentric governance, even though it is an old concept, is recently receiving growing attention in environmental studies (Heikkila, Villamayor-Tomas and Garrick, 2018). According to the authors, in the field of environmental studies, polycentric governance systems are beneficial because of their effectiveness in managing cross-scale environmental issues and also their effectiveness in addressing complex interrelationships within environmental and social systems. Andersson and Ostrom (2008) and Ostrom (2010) similarly argue that polycentricity offers advantages over both decentralized and hierarchical governance systems.

Pahl-Wostl and Knieper (2023), in “Pathways towards improved water governance”, examine how polycentric governance can enhance institutional coordination in complex water-management problems. The researchers argued that polycentric governance systems involve multiple and overlapping authorities, which can foster more resilient and adaptive methods for water management. They emphasize the need for effective vertical coordination and policy alignment across national, regional, and local levels to achieve effective water governance. This is referred to as vertical coordination. They also discuss horizontal coordination among agencies, the private sector, civil society, and government institutions. Their findings indicate a strong relationship between horizontal and vertical coordination. They conclude that such governance is essential for addressing complex inter-sectoral coordination challenges in water management.

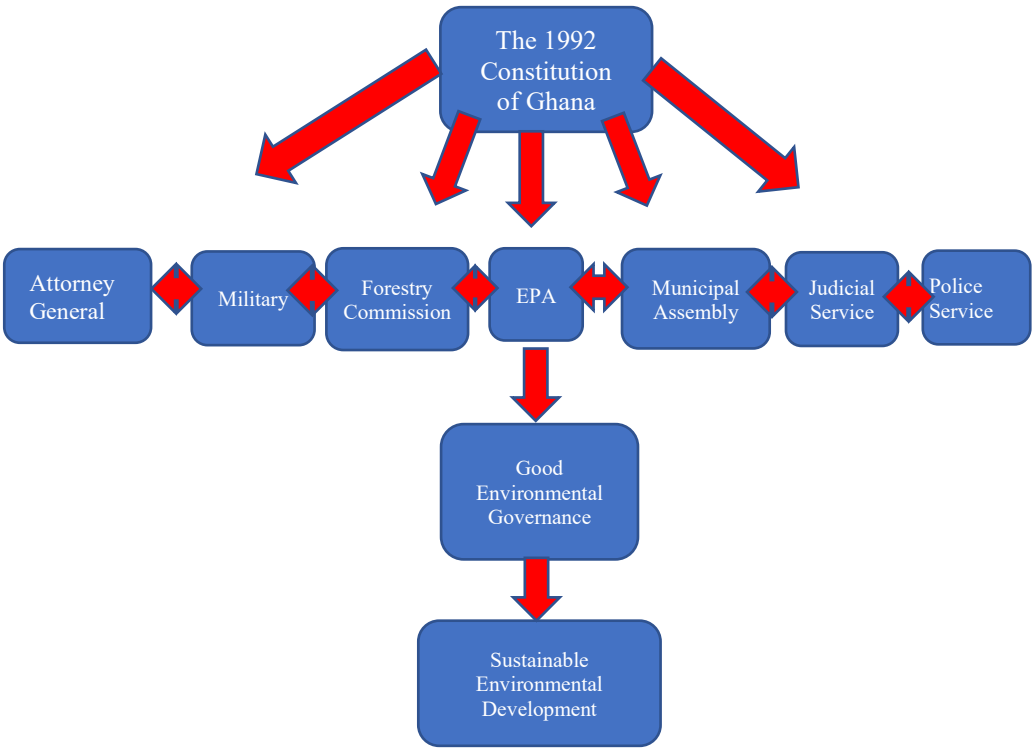

Figure 1: Ghana's Polycentric Environmental Governance Structure

Ghana's Polycentric Environmental Governance Structure indicates seven different institutions, namely: the Attorney General's Department (AG), the Military Service, the Forestry Commission (FC), the Environmental Protection Agency (EPA), the Municipal Assembly, the Judicial Service, and the Ghana Police Service (Figure 1). These institutions represent seven different structures that are autonomous. Each performs its different functions and has the mandate to make decisions on its own based on the power vested in it by the 1992 Constitution of Ghana. In the figure, the 1992 Constitution is depicted as the common centre that empowers these institutions. These institutions, however, can coordinate in sharing information and human resources among others. When these various institutions come together to make decisions and work together, it leads to effective environmental governance. This coordination helps the country to be in a better position to enforce environmental laws and to be able to fight all forms of environmental crimes in the country. This, in turn, promotes sustainable environmental development.

For this study, environmental governance is defined as an all-inclusive form of decision-making about the environment to achieve sustainable development. The study defines polycentric environmental governance as a framework in which multiple constitutionally derived institutions perform distinct roles while collaborating to combat environmental crime.

Materials and Methods

Study Design and Study Approach

A cross-sectional qualitative research design was adopted for its cost-effectiveness and suitability for capturing detailed contextual data within a limited timeframe (Wang and Cheng, 2020). Primary data was obtained through semi-structured interviews (Appendix 1) and two distinct focus group discussions (FGDs) (Appendix 2). The interviews helped the researcher obtain data on participants' perceptions and experiences concerning the topic under study (Jain, 2021), while the FGDs facilitated data collection through discussion, group interaction, and consensus-building (Saunders, Lewis and Thornhill, 2009).

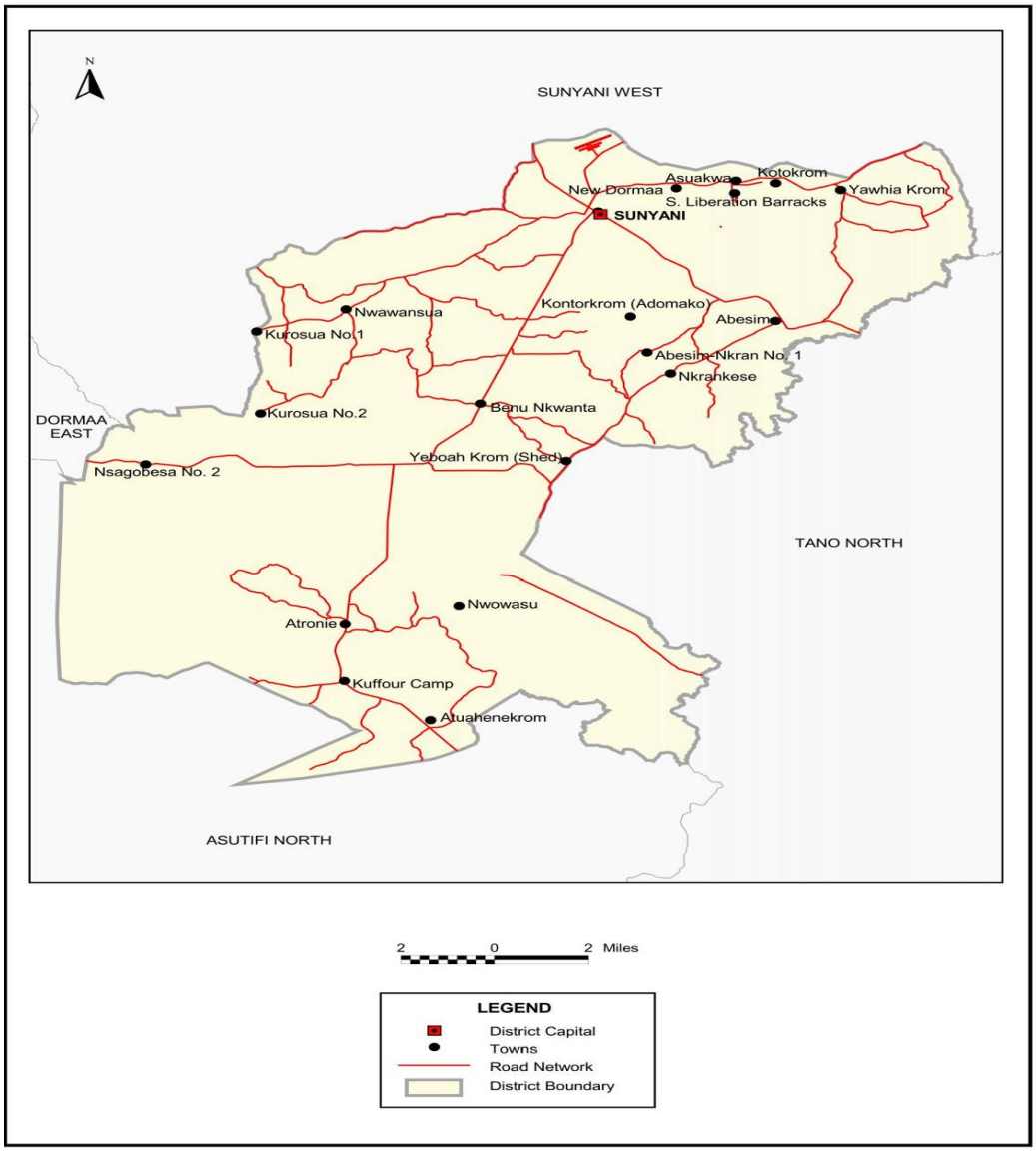

Figure 2: Map of Sunyani Municipality showing the sample sites [*Source:* Ghana Statistical Service (2012)]

The study involved seven enforcement agencies in Sunyani Municipality: The Municipal Assembly, EPA, AG, Military Service, FC, Judicial Service, and Ghana Police Service (Figure 2). Sunyani is the administrative capital of Ghana's Bono Region and spans an area of approximately 506.7 km^2. It lies between longitudes 2°30′W and 2°10′W and latitudes 7°20′N and 7°05′N, and is bordered by four districts, including Tano North to the east. The municipality lies within Ghana's Wet Semi-Equatorial Climatic Zone and is predominantly covered by Moist Semi-Deciduous Forest, home to valuable timber species. Two notable forest reserves, Amoma and Yaya, are located in the municipality (Ghana Statistical Service, 2012).

Study Population and Sampling

The study purposefully targeted personnel from key institutions responsible for environmental regulation and law enforcement within the Sunyani Municipality- namely the EPA, FC, AG, Sunyani Municipal Assembly (SMA), Ghana Police Service, Military Service, and Judicial Service (Table 1). These institutions were selected based on their statutory mandates and their central role in addressing environmental crime (Lirëza and Koçi, 2023). A purposive expert-sampling technique (Rai and Thapa, 2015) was used to select 30 potential interviewees based on leadership positions and expertise in environmental law enforcement. Following interviews with 19 participants (institutional heads or senior officers), data saturation was reached and the interview phase concluded (Table 1). To capture judicial perspectives on polycentric governance and collaboration challenges, one district court magistrate was also interviewed.

Table 1: Description of the studied population for the interview

Code	*Institution*	*Gender*	*Position*
FOC01	Forestry Commission	Male	Deputy Regional Manager
FOC02	Forestry Commission	Male	District Manager
FOC03	Forestry Commission	Female	Deputy District Manager
EPA01	Environmental Protection Agency	Male	Assistant Programs Officer
EPA02	Environmental Protection Agency	Male	Assistant Programs Officer
EPA03	Environmental Protection Agency	Male	Field Officer
JUD01	Judicial Service	Male	Court Clerk
JUD02	Judicial Service	Male	Court Clerk
JUD03	Judicial Service	Female	Deputy Regional Complaint Officer
AGD01	Attorney General's Department	Female	Lawyer
AGD02	Attorney General's Department	Male	Lawyer
MUN01	Sunyani Municipal Assembly	Male	Municipal Sanitation Officer
MUN02	Sunyani Municipal Assembly	Female	Deputy Municipal Planner
MUN03	Sunyani Municipal Assembly	Male	Municipal Development Officer
POL 01	Ghana Police Service	Male	Regional Commander

Code	*Institution*	*Gender*	*Position*
POL 02	Ghana Police Service	Male	Chief Inspector
SEC01	The Military Service	Male	Staff Sargent
SEC02	The Military Service	Male	Staff Sargent
MAG 01	District Court Magistrate	Male	District Court Magistrate

Data Collection, Analysis, and Limitations

In total, 19 in-depth interviews were conducted for all participants. Each FGD involved seven participants, one representing each enforcement institution. Junior-ranked officers were purposefully selected to capture their perspectives. The FGDs were conducted virtually using Microsoft Teams to ensure full participation of all participants (McDermott, 2013).

The interview and FGD audio files were all transcribed. The research team undertook a multi-stage thematic analysis process to interpret the data. First, the transcripts and field notes were read several times for familiarization with the data. Initial impressions and notes were recorded. The data was systematically read again to highlight significant words or phrases that contained essential information. These highlighted words and phrases were given codes. After this step, all codes that were related were grouped into themes. Overlapping themes were subsequently merged to become one theme. Finally, themes that did not have enough data to support were removed. The data were subsequently presented in the form of descriptions and narrations. The study objectives were addressed using data obtained from key informants on environmental law enforcement. Interviewees and FGD participants were asked about the systemic challenges faced by environmental law enforcement agencies and to evaluate whether the existing governance framework in Ghana aligns with the principles of polycentrism. The information obtained provided an understanding of the key challenges that these institutions encounter in enforcing environmental laws in Ghana. The data also provides an in-depth understanding of why these key institutions struggle to effectively collaborate to fight environmental crimes. According to Clarke and Braun (2017), thematic analysis offers the flexibility to adapt to diverse research contexts, including sample size and data collection methods.

The study encountered several challenges during data collection. The most significant challenge was accessing institutional heads; their demanding schedules caused repeated postponements. Most participants also saw the topic as both security and politically sensitive and, as such, were unwilling to participate.

Ethical Consideration

Ethical approval for the study was obtained from the Committee for Human Research and Ethics (CHRE) under the University of Energy and Natural Resources. After receiving the university's approval, the researcher submitted formal requests to the relevant institutions to gain permission to conduct the research within their organizations. Participants were assured their responses would be used only for academic purposes. To uphold ethical standards, each participant signed a consent form, indicating that their involvement was completely voluntary.

Results

Data obtained from the interviews and FGDs were thematically analyzed to identify key issues affecting environmental law enforcement in the Sunyani Municipality. Themes are presented under the main study objectives.

Challenges Faced by Implementing Agencies

Participants identified several critical systemic and operational challenges facing environmental-law enforcement agencies. Key challenges, as identified by the study's participants during interviews and FGDs, are presented in table 2.

Table 2: Thematic summary of challenges identified in interviews and FGDs

Themes	*Sub-Themes*	*Frequency of Mention*	*Sample of Quotes*
Challenges Faced by Implementing Agencies	Inadequate Training and Capacity	24	"[…] I don't think they have had enough or sufficient training to be able to handle these environmental issues." (JUD02).
	Inadequate logistics/equipment	25	"Even with some others, the vehicle to even get to the bush is a problem …" (JUD03)
	Lack of Decentralized Legal Units	19	"So if we could have a specialized court that will be dealing with these cases daily, they will go, you get it, they will go." (AGD01)
	Political and traditional leaders' interference	26	"And they *(enforcing officers)* are relaxed because of the interferences ..." (MUN02).

Table 2 reveals the following prominent challenges: inadequate training and capacity, political interference, and logistical constraints. The dominant challenge from the data obtained is political and traditional leaders' interference (n=26), followed by inadequate logistics/equipment (n=25), inadequate training and capacity (n=24), and lack of decentralized legal units (n=19). These challenges, which have been grouped into sub-themes, are discussed below:

Inadequate Training and Capacity

The challenge of inadequate training and capacity of environmental law enforcement personnel was identified as one of the main challenges by participants. Most participants lamented how environmental criminals have evolved in their modes of operation to the extent that they are easily able to escape whenever law enforcement agencies want to arrest them. Most participants in both the interviews and FGDs expressed their willingness to work and reduce environmental crimes in Ghana, but their efforts are

curtailed due to limited training and equipment to work with. A participant from the Judicial Service commented:

> *What I think is, err, the human resource is already there. All they need to do is give them the proper training and then the appropriate equipment and tools for them to be able to do the work. (JUD02, Personal Communication, January 2025).*

Inadequate Logistics/Equipment

Another key barrier revealed by the study among many participants was inadequate equipment or logistics needed to accomplish their tasks. Participants explained that this impedes the operational effectiveness of enforcement agencies. A participant from the police remarked:

> *The police have a lot of challenges when it comes to equipment or gadgets that are used for environmental law enforcement. For instance, there are places that we go to arrest illegal miners, and when we get there, the police have no boats to chase these miners ....” We also do not have enough life jackets to go for operations on water bodies. (POL 01, Personal Communication, January 2025).*

Lack of Decentralized Legal Units

Participants revealed an absence of decentralized legal units in institutions combating environmental crime, which is a major challenge. Participants noted that most offences occur in rural communities, while legal units are centralized in Accra, complicating timely prosecution. A Forestry Commission officer remarked:

> *[...] the legal unit in our sector is also seated in Accra, and the offenses are being carried out here. And then the arrest is also made here. (FOC01, Personal Communication, January 2025).*

The study participants revealed the need for specialized or dedicated environmental courts, just as there are commercial courts, criminal courts, and other specialized courts within the country. According to the participants, the general jurisdiction courts are overburdened with different caseloads, and as such, this leads to delays in prosecuting environmental cases. Most participants acknowledged how the general jurisdictional courts are doing their best to adjudicate environmental cases, but were still insistent that a specialized court would increase the rate and effectiveness of prosecuting environmental crimes. A participant from the Judicial Service stated:

> *[...] there should be a specialized court, you are arrested today, by next week you are sentenced, and the case is closed, it'll scare everyone. (FGD2-JUD01, Personal Communication, January 2025).*

Political and Traditional Leaders’ Interference

Political interference emerged as a significant challenge, as highlighted by participants in both the interviews and FGDs. Participants emphasized that interference from traditional authorities and political figures, as well as prosecution delays, undermines enforcement and hinders bringing offenders to justice. Participants observed that

external political pressure and influence can manipulate implementation of environmental regulations to serve private interests. A police officer remarked that;

> *Where I am now, in any case that comes, and the chiefs and opinion leaders are involved, they will come and say that we want to bail our people. And you see, if you try to resist them, they will go as far as to even the Ministerial level for them to call and to interfere with the case. (FGD2-POL01, Personal Communication, January 2025).*

A participant from the FC also commented during an FGD:

> *[…] the politicians are not helping at the moment. They should allow the law to take its course so that most of the crimes can be minimized. (FGD2-FOR01, Personal Communication, January 2025).*

Some participants during the interview cited cultural attitudes as some of the challenges hindering the role of implementing agencies in environmental prosecution. They indicated that the country has lots of environmental laws, but enforcement has become difficult due to factors such as cultural attitudes. A participant from the Municipal Assembly noted:

> *"Our people, if you say you are taking someone to court, you'll send him to court today, and the nuisance that he caused, that made you send him to court, tomorrow, he will commit the same thing. So, we need total attitudinal change." (MUN01, Personal Communication, January 2025).*

The main themes from both the interviews and FGDs, which were presented in table 2 above, were subsequently used to generate the bar chart shown in figure 3.

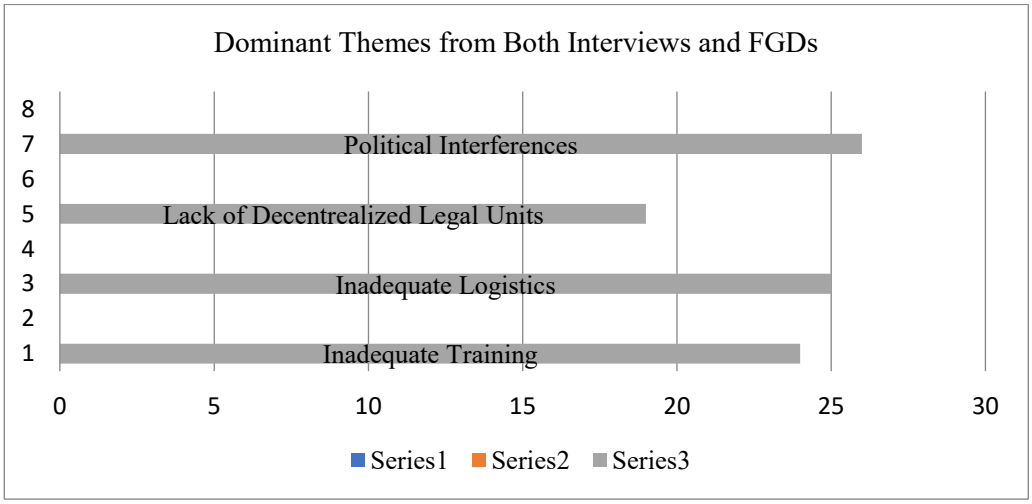

Figure 3: Dominant themes from interviews and FGDs

Figure 3 shows political and traditional-leader interference as the most frequently mentioned barrier (n = 26), followed by inadequate logistics/equipment (n = 25), inadequate training and capacity (n = 24), and lack of decentralized legal units (n = 19). Minimising political interference and improving logistics could substantially strengthen environmental law enforcement.

Polycentric Nature of Ghana's Environmental Governance Structure

The second objective was to assess the polycentric nature of Ghana's environmental enforcement agencies. Specifically, the study examined whether institutions fighting environmental crime are well coordinated. The study reviewed two sub-themes, which are shown in table 3.

Table 3: Thematic summary of agency coordination (interviews and FGDs)

Themes	*Sub-Themes*	*Frequency of Mention*	*Sample of Quotes*
Polycentric Nature of Ghana's Environmental Governance Structure	Agencies are not fully coordinated	27	"The docket will come, you'll work on it, and the very same people who arrested these people, you need them as witnesses, but they are not coming, do you get it?" (AGD01)
	Coordination Challenges	24	"That one is another challenge, we are not well-coordinated. We are not well connected." (SEC01)

Table 3 indicates weak coordination among agencies combating environmental crime. Twenty-seven respondents stated they are not well coordinated, and 24 noted that collaborative efforts often face operational challenges. These findings are illustrated in the bar graph in figure 4.

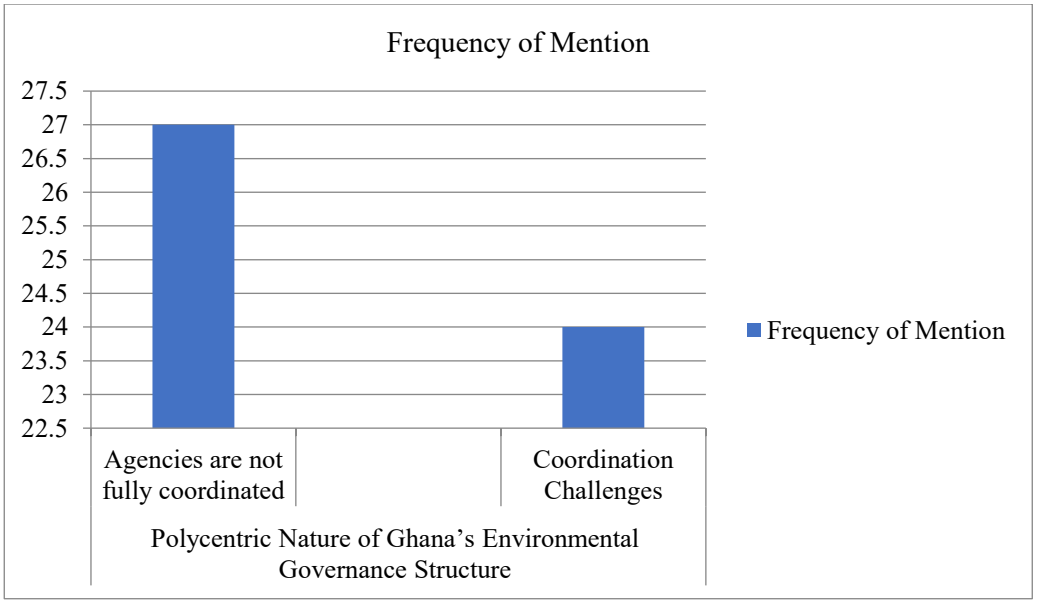

Figure 4: A Bar Graph Showing the Thematic Summary of the Coordination of Agencies

The sub-themes, which were generated from table 3 and subsequently presented in figure 4, have been discussed in detail.

Coordination of Enforcing Agencies

Several participants noted that Ghana's environmental governance structure exhibits some polycentric characteristics, with multiple agencies involved in enforcement. Responses indicated that most institutions, besides performing mandated duties, sometimes collaborate with other agencies on environmental enforcement. Some of the responses from the participants, which indicate how they collaborate with other institutions, are stated below: Response from military personnel during an FGD:

> *"Normally, these illegal operators operate in a dense area, for example, in a very thick forest where the police cannot even get to them. It's not because they cannot go there but simply because most of them have not been trained in this terrain, and for that matter, they fall on us to assist them." (FGD2-MIL01, Personal Communication, January 2025).*

A participant from the police service also commented:

> *"The forestry officials normally arrest these suspects and bring them to us for investigations. So when they are brought, we investigate them; if they are found culpable or if we suspect anything, we prepare them for court." (FGD2-POL01, Personal Communication, January 2025).*

Although participants reported some collaboration, overall coordination remains weak, producing inefficiencies in enforcement and prosecution. Participants confirmed that agencies often operate in isolation, and no comprehensive legal framework ensures effective coordination among them. Most participants agreed that enforcement institutions are not well coordinated in their responses to environmental crime. A participant from the Forestry Commission remarked:

> *"I would say we are not fully coordinated in the sense that some of the laws are disjointed. So we have EPA law and forestry law, but at the end of the day, they should all work together for the benefit of the country. How come the EPA should issue a prospective license in a gazetted forest reserve in Ghana without recourse to the FC? That means something is missing, some link is missing." (FOC01, Personal Communication, January 2025).*

A lawyer from the AG also spoke about the problem of coordination in dealing with prosecution cases that come from the FC:

> *"The docket will come, and you'll work on it, the very same people (forestry officials) who arrested these people, you need them as witnesses, but they are not coming, do you get it.... I think there is also a lack of communication between these key institutions" (AGD01, Personal Communication, January 2025).*

When the lawyer was further asked whether there is any system that links the Attorney General's Department to the other law enforcement agencies in terms of combating environmental crimes, and meeting periodically to plan on how to curb environmental crimes, the lawyer noted:

> *No, there is no system like that. There is no system like that. I think there is also a lack of communication between these key institutions. (AGD01, Personal Communication, January 2025).*

A participant from the military said this when asked whether the institutions fighting environmental crimes are well coordinated. The officer stated:

> *"That one is another challenge, we are not well-coordinated. We are not well connected." (SEC01, Personal Communication, January 2025).*

Challenges with the Current Level of Coordination

The study also sought to find out from the participants whether there exist challenges when the enforcement agencies come together. The study by this wanted to know whether there are barriers or challenges anytime they collaborate with other institutions to fight environmental crimes. Responses from some of the participants concerning this issue are stated below; an officer from the police service noted during a FGD:

> *So, the challenges we face, per my experiences, are individual differences. You know, you might be with the agencies, but some people within the agencies might have their own interests. I mean, they are looking at ways of stealing the gold, or ways of helping A or B (offenders). (FGD1 POL01, Personal Communication, January 2025).*

A participant from the military in an FGD stated:

> *So the major challenge that we face in the collaboration is the corruption by some of the officers. Apart from that, some of the officers also lack experience, education, or professionalism (FGD1-MIL01, Personal Communication, January 2025).*

A participant from the Judicial Service also remarked:

> *I think one main challenge has to do with the separation of powers. I think when we all come together, there is this challenge of who is supposed to do what? (FGD2-JUD01, Personal Communication, January 2025).*

Discussion

Challenges Faced by Implementing Agencies

Inadequate Training and Capacity

A recurring theme was the lack of continuous capacity-development programs needed to combat the evolving modes of operation by environmental criminals. These observations align with earlier findings by Tuokuu *et al*. (2018), which identified the gaps in institutional capacity and technical know-how as fundamental barriers to Ghana's effective environmental law enforcement and governance systems. This reinforces the earlier perspective expressed by Crawford and Botchwey (2017), which argues that Ghana's environmental enforcement institutions are operationally weak and under-resourced when it comes to enforcing environmental laws. The study believes that this is so because of the low commitment on the part of the government to fight environmental crimes. The findings obtained indicate that the modus operandi of environmental criminals keeps changing from time to time. It is therefore very important for the enforcing institutions to be up to date in terms of capacity and skills to combat

these types of crimes; otherwise, these criminals would always be a step ahead of our enforcing institutions.

Inadequate Logistics/Equipment

The findings from the study also indicated that inadequate logistics and equipment significantly hinder the effectiveness of implementing agencies in environmental prosecution in Ghana. The findings corroborate previous research by Tuokuu *et al*. (2018) and Crawford and Botchwey (2017). According to the authors, there exist severe resource constraints, including transportation, trained personnel, and technical equipment, among environmental law enforcement institutions in Ghana. This also aligns with the findings of Boakye (2020) and Mensah *et al*. (2020), who argue that enforcement institutions are inadequately resourced, thus undermining the capacity to both detect and apprehend environmental offenders effectively. The study is of the view that there is a lack of political will or commitment to fight environmental crimes. *Logistical constraints (vehicles, surveillance tools) and weak institutional capacity hinder agencies' ability to monitor, arrest, and prosecute offenders.*

Lack of Decentralized Legal Units

Participants also noted that most courts and police stations are located only in district and regional capitals. This finding aligns with the findings of Osei-Kojo, Asamoah and Yeboah-Assiamah (2016) and Crawford and Botchwey (2017), who similarly argued that Ghana's environmental law enforcement is mostly hindered by institutional inefficiencies such as a centralized legal decision-making system. The study believes that this is a result of the fact that most institutions in Ghana are still centralized. The study therefore advocates for the decentralization of institutions such as courts, the police service, and the EPA, among others.

Regarding specialised courts, the findings indicate that Ghana currently lacks courts dedicated solely to environmental offences. The findings align with studies by Couzens (2014), who also argues that the establishment of specialized courts could improve legal efficiency and enhance the prosecution of environmental offenses. The findings also corroborate Aboagye, Effah and Mensah (2022), who report that slow legal processes and inadequate judicial capacity hinder prosecutions. The study is of the opinion that governments around the world are more interested in fighting other forms of crime than in fighting environmental crimes. Consequently, comparatively little attention is paid to environmental crime prosecution. If unaddressed, this will perpetuate case backlogs and demotivate officers who make arrests.

Political and traditional leaders' interference

Most participants believed political and traditional-leader interference undermines enforcement and weakens institutional effectiveness. This is consistent with the findings of Dermawan *et al*. (2023), which was conducted in Indonesia. The researchers asserted that the country faces significant environmental protection challenges due to weak legal policies, poor monitoring mechanisms, and corruption among officials. This also aligns with findings from Couzens (2014), who argues that political interference limits the

ability of environmental institutions to effectively enforce environmental laws. Aboagye, Effah and Mensah (2022) likewise identify weak institutional structures and political manipulation as major barriers to governance. The study thinks that environmental crimes such as galamsey and illegal logging activities are mostly financed by politicians; as a result, they tend to interfere with the work of enforcing agencies, as shown from the data obtained. The study calls for further research to ascertain the extent and nature of political involvement in galamsey and illegal logging. The study believes that if the interferences of politicians and other influential people are not reduced, the fight against environmental crimes in Ghana would be a mirage.

Polycentric Nature of Ghana's Environmental Governance Structure

The study identified that while Ghana's environmental governance structure exhibits some elements of polycentric governance, there is weak coordination among agencies resulting from the lack of a well-defined legal framework. Previous studies support this finding by arguing that polycentric governance involves multiple autonomous institutions working collaboratively, yet Ghana's fragmented institutional landscape limits effective environmental law enforcement, as already stated by Heikkila, Villamayor-Tomas and Garrick (2018) and Pahl-Wostl & Knieper (2023). Similarly, this aligns with the findings of Mevuta and Boachie-Yiadom (2013), who state that weak inter-agency coordination has been identified as a major challenge to the effective prosecution of environmental crimes. The findings obtained also align with the findings of other studies, which also state that, while joint meetings occur, they do not always translate into cohesive action on the ground, as bureaucratic inefficiencies and fragmented institutional frameworks hinder real-time collaboration (Osei-Kojo, Asamoah and Yeboah-Assiamah, 2016; Mensah *et al*., 2020).

The study believes that the lack of proper coordination among enforcing institutions stems from the fact that there is a lack of a proper legal framework that mandates all these institutions to coordinate and fight environmental crimes.

Conclusion and Policy Implications

This study examined systemic challenges facing environmental enforcement agencies in Ghana and evaluated whether the governance framework aligns with polycentric principles. Qualitative data were gathered from two FGDs and interviews. The findings revealed that environmental enforcement agencies operate within well-defined legal frameworks established by the 1992 Constitution of Ghana. However, their effectiveness is significantly undermined by a range of systemic challenges, including inadequate resources, limited institutional capacity resulting from inadequate training to address evolving environmental crimes, and political and other external interference.

While key institutions such as the SMA (Sanitation Unit) and the Police Service have the authority to prosecute environmental offenders, others like the FC and the Military are restricted to only arresting suspects and depend on the prosecutorial powers of the Police and the AG. This reliance weakens their ability and independence to ensure prompt prosecution. It also demotivates them to see people arrested by them not being punished because they are not able to prosecute their cases directly.

The study concludes that the intended polycentric governance model is weakened by challenges such as corruption, political influence, lack of professionalism, and poor coordination among stakeholders. Although agencies derive authority from the 1992 Constitution and sometimes collaborate, genuine inter-agency cooperation remains insufficient. Ghana's environmental governance framework cannot, therefore, be said to be a true polycentric structure, although it exhibits some principles of polycentricism.

The research supports the view that polycentric governance can facilitate effective coordination; fragmented or overly centralized systems tend to perform poorly. The study finally concludes that true environmental polycentric governance can improve environmental sustainability by involving multiple stakeholders from decision-making to implementation.

Recommendations

1. Reduce Political and Traditional Interference
Enforcement agencies must be insulated from political pressure. Government should develop legal provisions that criminalize undue interference in environmental cases and strengthen institutional independence.

2. Strengthen Logistical Capacity
Agencies should be equipped with modern tools such as drones, boats, life jackets, bulletproof vests, GPS devices, and surveillance technologies to effectively monitor and apprehend offenders in high-risk areas.

3. Empower Agencies with Prosecutorial Authority
Agencies directly involved in arrests should be empowered to prosecute environmental offenses. This would minimize delays, reduce opportunities for corruption, and improve accountability.

4. Decentralize Enforcement and Judicial Structures
Key institutions such as the Police Service, Attorney General's Department, EPA, and courts should be decentralized to rural areas where environmental crimes are most prevalent. Specialized environmental courts should also be established to improve prosecution efficiency.

5. Institutionalize Mandatory Inter-Agency Coordination
A legal framework should be established requiring regular joint meetings, information sharing, and coordinated strategic planning among environmental enforcement agencies, similar to the REGSEC/DISEC model.

6. Promote Polycentric Governance for Environmental Sustainability
Ghana should progressively adopt a stronger polycentric governance model involving multiple autonomous but coordinated stakeholders across different scales. This will ensure more resilient and adaptive environmental governance.

Acknowledgement

The authors thank the heads and staff of the following institutions for permitting us to solicit data from them and their hardworking staff; The Regional Administrative Officer and Staff of Judicial Service (Sunyani), The Regional Police Commander and Staff of Ghana Police Service (Sunyani), The Regional Director and Sunyani District Director of Forestry Commission (Sunyani), The Principal State Attorney and Staff of the Attorney General's Department (Sunyani), The Regional Director and staff of EPA (Sunyani), The Sunyani Municipal Chief Executive and staff, and the Commander in charge of Ghana Armed Forces (Sunyani).

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Appendices

Appendix 1

INTERVIEW GUIDE

Section 1: Capacity and Training

1. In your opinion, how adequately trained and equipped are Ghana's law enforcement institutions to address environmental crimes?
2. Do law enforcement institutions possess sufficient knowledge and training in environmental law to handle such cases effectively?
3. How would you evaluate the effectiveness of the mandates or functions assigned to these governance structures in promoting environmental sustainability and reducing environmental degradation?
4. What key challenges or constraints do you encounter in enforcing environmental laws or combating environmental crimes?

Section 2: Coordination of Environmental Governance Structures

1. What is the main environmental governance structure operating in Ghana, and how effective are they in enforcing environmental laws?
2. To what extent do these institutions coordinate and collaborate in addressing environmental issues?
3. How would you describe the level of coordination among institutions mandated to enforce environmental laws in Ghana?
4. Do you believe that inadequate coordination among government institutions undermines the implementation of environmental policies?
5. From your perspective, can Ghana's environmental governance system be described as *polycentric*?
6. What reforms or improvements would you suggest to strengthen the current environmental governance framework and make it more responsive to emerging environmental challenges?
7. Given the diversity of actors involved in environmental management, do you think effective environmental governance is achievable in Ghana?

Section 3: Institutional Challenges

1. What are the major institutional barriers that impede effective environmental governance in Ghana?
2. How would you assess the institutional capacity of environmental agencies to enforce existing environmental regulations?
3. In what ways does political will—or the lack thereof—affect the enforcement of environmental laws in Ghana?
4. To what extent would you agree that law enforcement agencies face limitations or constraints in addressing environmental crimes?
5. What strategies could be adopted to minimize corruption and enhance integrity within institutions responsible for environmental governance?

Section 4: Recommendations for Improvement

1. What practical measures or policy interventions would you recommend to strengthen environmental governance in Ghana?

2. How can government agencies, civil society, and other stakeholders collaborate more effectively to overcome the challenges associated with environmental governance and enforcement?

Appendix 2
Focus Group Discussion Guide

Theme 1: Capacity and Training

1. How does the level of training and expertise among environmental law enforcement officers influence their effectiveness?
2. Do you think environmental enforcement agencies in Ghana possess adequate skills, equipment, and resources to perform their duties effectively?
3. In your view, how do financial constraints, limited staffing, and inadequate training affect the enforcement of environmental laws and policies?
4. How would you assess the overall institutional capacity of Ghana's environmental agencies in enforcing regulations and preventing environmental crimes?

Theme 2: Experiences in Joint Operations

1. Have you or your institution participated in any joint operations aimed at addressing environmental crimes?
2. What major experiences or lessons can you share from these collaborative efforts?
3. What challenges did your team or partner agencies encounter during joint operations?
4. How effective is the coordination between the various institutions responsible for combating environmental crimes?
5. What strategies or mechanisms could be introduced to enhance inter-agency collaboration and coordination?

Theme 3: Institutional Challenges

1. What do you consider the main institutional barriers to effective environmental governance in Ghana?
2. How does poor coordination among government institutions influence the implementation of environmental policies?
3. To what extent do political will and political influence affect environmental law enforcement?
4. Do you believe corruption presents a significant obstacle to environmental governance? Please share examples of how this manifests, if possible.
5. What practical measures could be implemented to minimize corruption and promote transparency within environmental institutions?

Theme 4: Recommendations for Improvement

- What specific actions do you believe could strengthen environmental governance in Ghana?

Authors' Declarations and Essential Ethical Compliances

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	*Author 1*	*Author 2*	*Author 3*
Conceived and designed the research or analysis	Yes	Yes	Yes
Collected the data	Yes	Yes	Yes
Contributed to data analysis & interpretation	Yes	Yes	Yes
Wrote the article/paper	Yes	Yes	Yes
Critical revision of the article/paper	Yes	No	No
Editing of the article/paper	Yes	Yes	Yes
Supervision	Yes	No	No
Funding Acquisition	Yes	No	No
Overall Contribution Proportion (%)	40	30	30

Funding
No financial support was received for the research and writing of this article.

Research involving human bodies or organs or tissues (Helsinki Declaration)
The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)
The author(s) has/have NOT complied with PRISMA standards to an extent.

Competing Interests/Conflict of Interest
Author(s) has/have no competing financial, professional, or personal interests from other parties or in publishing this manuscript. There is no conflict of interest with the publisher or the editorial team or the reviewers.

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